IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-48. (Canceled)

49. (Previously presented) A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film comprising silicon as a main component over an insulating surface;

adding a catalytic element for promoting crystallization to the amorphous semiconductor film,

conducting a first heat treatment after the adding of the catalytic element, to form a crystalline semiconductor film;

forming a barrier layer over the crystalline semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the barrier layer;

moving the catalytic element to the semiconductor film containing the rare gas element by a second heat treatment; and

removing the semiconductor film containing the rare gas element.

50. (Previously presented)The method according to claim 49, wherein the barrier layer is a chemical oxide film formed by ozone water.

51. (Previously presented)The method according to claim 49, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

52. (Previously presented)The method according to claim 49, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

53. (Previously presented)The method according to claim 49, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

54. (Previously presented)The method according to claim 49, wherein the rare gas element is at least one element selected from the group consisting of He, Ne, Ar, Kr, and Xe.

55. (Previously presented)The method according to claim 49, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

56. (Previously presented)The method according to claim 49, wherein the first heat treatment is conducted by using an electrothermal furnace.

57. (Previously presented)The method according to claim 49, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

58. (Previously presented)The method according to claim 49, wherein the second heat treatment is conducted by using an electrothermal furnace.

59. (Previously presented)The method according to claim 49, wherein the catalytic element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

60. (Previously presented)A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film comprising silicon as a main component over an insulating surface;

adding a catalytic element for promoting crystallization to the amorphous semiconductor film to form a crystalline semiconductor film by a first heat treatment;

irradiating the crystalline semiconductor film with a laser light;

forming a barrier layer over the crystalline semiconductor film irradiated with the laser light;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the barrier layer;

moving the catalytic element to the semiconductor film containing the rare gas element by a second heat treatment; and

removing the semiconductor film containing the rare gas element.

61. (Previously presented)The method according to claim 60, wherein the barrier layer is a chemical oxide film formed by ozone water.

62. (Previously presented)The method according to claim 60, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

63. (Previously presented)The method according to claim 60, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

64. (Previously presented)The method according to claim 60, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

65. (Previously presented)The method according to claim 60, wherein the rare gas element is at least one selected from the group consisting of He, Ne, Ar, Kr, and Xe.

66. (Previously presented)The method according to claim 60, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

67. (Previously presented)The method according to claim 60, wherein the first heat treatment is conducted by using an electrothermal furnace.

68. (Previously presented)The method according to claim 60, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a

halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

69. (Previously presented)The method according to claim 60, wherein the second heat treatment is conducted by using an electrothermal furnace.

70. (Previously presented)The method according to claim 60, wherein the catalytic element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

71. (Previously presented)A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film comprising silicon as a main component over an insulating surface;

adding a catalytic element for promoting crystallization to the amorphous semiconductor film to form a crystalline semiconductor film by a first heat treatment;

forming a barrier layer over the crystalline semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the barrier layer;

moving the catalytic element to the semiconductor film containing the rare gas element by a second heat treatment;

removing the semiconductor film containing the rare gas element; and

irradiating the crystalline semiconductor film with a laser light after removing the semiconductor film containing the rare gas element.

72. (Previously presented)The method according to claim 71, wherein the barrier layer is a chemical oxide film formed by ozone water.

73. (Previously presented)The method according to claim 71, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

74. (Previously presented)The method according to claim 71, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

75. (Previously presented)The method according to claim 71, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

76. (Previously presented)The method according to claim 71, wherein the rare gas element is at least one selected from the group consisting of He, Ne, Ar, Kr, and Xe.

77. (Previously presented)The method according to claim 71, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

78. (Previously presented)The method according to claim 71, wherein the first heat treatment is conducted by using an electrothermal furnace.

79. (Previously presented)The method according to claim 71, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

80. (Previously presented)The method according to claim 71, wherein the second heat treatment is conducted by using an electrothermal furnace.

81. (Previously presented)The method according to claim 71, wherein the catalytic element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

82. (Original) A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film comprising silicon as a main component over an insulating surface;

adding a catalytic element for promoting crystallization to the amorphous semiconductor film;

forming a barrier layer over the amorphous semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the barrier layer;

crystallizing the amorphous semiconductor film by a heat treatment to form a crystalline semiconductor film and moving the catalytic element to the semiconductor film containing the rare gas element;

removing the semiconductor film containing the rare gas element; and

irradiating the crystalline semiconductor film with laser light.

83. (Previously presented)The method according to claim 82, wherein the barrier layer is a chemical oxide film formed by ozone water.

84. (Previously presented)The method according to claim 82, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

85. (Previously presented)The method according to claim 82, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

86. (Previously presented)The method according to claim 82, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

87. (Previously presented)The method according to claim 82, wherein the rare gas element is at least one selected from the group consisting of He, Ne, Ar, Kr, and Xe.

88. (Previously presented)The method according to claim 82, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

89. (Previously presented)The method according to claim 82, wherein the first heat treatment is conducted by using an electrothermal furnace.

90. (Previously presented)The method according to claim 82, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

91. (Previously presented)The method according to claim 82, wherein the second heat treatment is conducted by using an electrothermal furnace.

92. (Previously presented)The method according to claim 82, wherein the catalytic element is one kind or a plurality of kinds of elements selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

93. (Original) A method of manufacturing a semiconductor device, comprising the steps of:

adding a catalytic element for promoting crystallization to an insulating surface;

forming an amorphous semiconductor film comprising silicon as a main component over the insulating surface;

forming a barrier layer over the amorphous semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the amorphous semiconductor film;

crystallizing the amorphous semiconductor film by a heat treatment to form a crystalline semiconductor film and moving the catalytic element to the semiconductor film containing the rare gas element;

removing the semiconductor film containing the rare gas element; and

irradiating the crystalline semiconductor film with laser light.

94. (Previously presented)The method according to claim 93, wherein the barrier layer is a chemical oxide film formed by ozone water.

95. (Previously presented)The method according to claim 93, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

96. (Previously presented)The method according to claim 93, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

97. (Previously presented)The method according to claim 93, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

98. (Previously presented)The method according to claim 93, wherein the rare gas element is at least one selected from the group consisting of He, Ne, Ar, Kr, and Xe.

99. (Previously presented)The method according to claim 93, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

100. (Previously presented)The method according to claim 93, wherein the first heat treatment is conducted by using an electrothermal furnace.

101. (Previously presented)The method according to claim 93, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

102. (Previously presented)The method according to claim 93, wherein the second heat treatment is conducted by using an electrothermal furnace.

103. (Previously presented)The method according to claim 93, wherein the catalytic element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

104. (Original) A method of manufacturing a semiconductor device, comprising the steps of:

adding a catalytic element for promoting crystallization to an insulating surface;

forming an amorphous semiconductor film comprising silicon as a main component over the insulating surface;

forming a barrier layer over the amorphous semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the amorphous semiconductor film;

adding a rare gas element to the semiconductor film containing the rare gas element;

crystallizing the amorphous semiconductor film by a heat treatment to form a crystalline semiconductor film and moving the catalytic element to the semiconductor film containing the rare gas element;

removing the semiconductor film containing the rare gas element; and

irradiating the crystalline semiconductor film with laser light.

105. (Previously presented)The method according to claim 104, wherein the barrier layer is a chemical oxide film formed by ozone water.

106. (Previously presented)The method according to claim 104, wherein the barrier layer is formed by oxidizing a surface of the amorphous semiconductor film by a plasma treatment.

107. (Previously presented)The method according to claim 104, wherein the barrier layer is formed by irradiating UV-rays in an atmosphere containing oxygen to generate ozone, thereby oxidizing a surface of the amorphous semiconductor film.

108. (Previously presented)The method according to claim 104, wherein the barrier layer is a porous film formed with a film thickness of 1 to 10 nm.

109. (Previously presented)The method according to claim 104, wherein the rare gas element is at least one selected from the group consisting of He, Ne, Ar, Kr, and Xe.

110. (Previously presented)The method according to claim 104, wherein the first heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

111. (Previously presented)The method according to claim 104, wherein the first heat treatment is conducted by using an electrothermal furnace.

112. (Previously presented)The method according to claim 104, wherein the second heat treatment is conducted by radiation from at least one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high-pressure sodium lamp, and a high-pressure mercury lamp.

113. (Previously presented)The method according to claim 104, wherein the second heat treatment is conducted by using an electrothermal furnace.

114. (Previously presented)The method according to claim 104, wherein the catalytic element is at least one selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

115 - 118. (Canceled)

119. (Previously presented)The method according to claim 49, wherein the semiconductor device is a personal computer.

120. (Previously presented)The method according to claim 49, wherein the semiconductor device is a video camera.

121. (Previously presented)The method according to claim 49, wherein the semiconductor device is a mobile computer.

122. (Previously presented)The method according to claim 49, wherein the semiconductor device is a goggle type display.

123. (Previously presented)The method according to claim 49, wherein the semiconductor device is a player using a record medium.

124. (Previously presented)The method according to claim 49, wherein the semiconductor device is a digital camera.

125. (Previously presented)The method according to claim 49, wherein the semiconductor device is a front type projector.

126. (Previously presented)The method according to claim 49, wherein the semiconductor device is a rear type projector.

127. (Previously presented)The method according to claim 49, wherein the semiconductor device is a portable telephone.

128. (Previously presented)The method according to claim 49, wherein the semiconductor device is an electronic book.

129. (Previously presented)The method according to claim 60, wherein the semiconductor device is a personal computer.

130. (Previously presented)The method according to claim 60, wherein the semiconductor device is a video camera.

131. (Previously presented)The method according to claim 60, wherein the semiconductor device is a mobile computer.

132. (Previously presented)The method according to claim 60, wherein the semiconductor device is a goggle type display.

133. (Previously presented)The method according to claim 60, wherein the semiconductor device is a player using a record medium.

134. (Previously presented)The method according to claim 60, wherein the semiconductor device is a digital camera.

135. (Previously presented)The method according to claim 60, wherein the semiconductor device is a front type projector.

136. (Previously presented)The method according to claim 60, wherein the semiconductor device is a rear type projector.

137. (Previously presented)The method according to claim 60, wherein the semiconductor device is a portable telephone.

138. (Previously presented)The method according to claim 60, wherein the semiconductor device is an electronic book.

139. (Previously presented)The method according to claim 71, wherein the semiconductor device is a personal computer.

140. (Previously presented)The method according to claim 71, wherein the semiconductor device is a video camera.

141. (Previously presented)The method according to claim 71, wherein the semiconductor device is a mobile computer.

142. (Previously presented)The method according to claim 71, wherein the semiconductor device is a goggle type display.

143. (Previously presented)The method according to claim 71, wherein the semiconductor device is a player using a record medium.

144. (Previously presented)The method according to claim 71, wherein the semiconductor device is a digital camera.

145. (Previously presented)The method according to claim 71, wherein the semiconductor device is a front type projector.

146. (Previously presented)The method according to claim 71, wherein the semiconductor device is a rear type projector.

147. (Previously presented)The method according to claim 71, wherein the semiconductor device is a portable telephone.

148. (Previously presented)The method according to claim 71, wherein the semiconductor device is an electronic book.

149. (Previously presented)The method according to claim 82, wherein the semiconductor device is a personal computer.

150. (Previously presented)The method according to claim 82, wherein the semiconductor device is a video camera.

151. (Previously presented)The method according to claim 82, wherein the semiconductor device is a mobile computer.

152. (Previously presented)The method according to claim 82, wherein the semiconductor device is a goggle type display.

153. (Previously presented)The method according to claim 82, wherein the semiconductor device is a player using a record medium.

154. (Previously presented)The method according to claim 82, wherein the semiconductor device is a digital camera.

155. (Previously presented)The method according to claim 82, wherein the semiconductor device is a front type projector.

156. (Previously presented)The method according to claim 82, wherein the semiconductor device is a rear type projector.

157. (Previously presented)The method according to claim 82, wherein the semiconductor device is a portable telephone.

158. (Previously presented)The method according to claim 82, wherein the semiconductor device is an electronic book.

159. (Previously presented)The method according to claim 93, wherein the semiconductor device is a personal computer.

160. (Previously presented)The method according to claim 93, wherein the semiconductor device is a video camera.

161. (Previously presented)The method according to claim 93, wherein the semiconductor device is a mobile computer.

162. (Previously presented)The method according to claim 93, wherein the semiconductor device is a goggle type display.

163. (Previously presented)The method according to claim 93, wherein the semiconductor device is a player using a record medium.

164. (Previously presented)The method according to claim 93, wherein the semiconductor device is a digital camera.

165. (Previously presented)The method according to claim 93, wherein the semiconductor device is a front type projector.

166. (Previously presented)The method according to claim 93, wherein the semiconductor device is a rear type projector.

167. (Previously presented)The method according to claim 93, wherein the semiconductor device is a portable telephone.

168. (Previously presented)The method according to claim 93, wherein the semiconductor device is an electronic book.

169. (Previously presented)The method according to claim 104, wherein the semiconductor device is a personal computer.

170. (Previously presented)The method according to claim 104, wherein the semiconductor device is a video camera.

171. (Previously presented)The method according to claim 104, wherein the semiconductor device is a mobile computer.

172. (Previously presented)The method according to claim 104, wherein the semiconductor device is a goggle type display.

173. (Previously presented)The method according to claim 104, wherein the semiconductor device is a player using a record medium.

174. (Previously presented)The method according to claim 104, wherein the semiconductor device is a digital camera.

175. (Previously presented)The method according to claim 104, wherein the semiconductor device is a front type projector.

176. (Previously presented)The method according to claim 104, wherein the semiconductor device is a rear type projector.

177. (Previously presented)The method according to claim 104, wherein the semiconductor device is a portable telephone.

178. (Previously presented)The method according to claim 104, wherein the semiconductor device is an electronic book.

179-198. (Canceled)

199. (New) A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film comprising silicon as a main component over an insulating surface;

adding a catalytic element for promoting crystallization to the amorphous semiconductor film,

conducting a first heat treatment after the adding of the catalytic element, to form a crystalline semiconductor film;

forming a barrier layer over the crystalline semiconductor film;

forming a semiconductor film containing a rare gas element in a concentration of $1 \times 10^{19}/cm^3$ to $1 \times 10^{22}/cm^3$ over the barrier layer;

moving the catalytic element to the semiconductor film containing the rare gas element by a second heat treatment;

removing the semiconductor film containing the rare gas element,

forming a first n-channel thin film transistor and a second -channel thin film transistor using the crystalline semiconductor as active layers,

wherein the first n-channel thin film transistor has a first gate electrode and a first impurity region outside the first gate electrode, and

wherein the second n-channel thin film transistor has a second gate electrode and a second impurity region overlapping with the second gate electrode at least partially.